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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/898,799	07/03/2001	Xiao-An Zhang	10003868-1	5646

7590 06/04/2003  
HEWLETT-PACKARD COMPANY  
Intellectual Property Administration  
P.O. Box 272400  
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EXAMINER

THOMPSON, TIMOTHY J

ART UNIT PAPER NUMBER

2873

DATE MAILED: 06/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/898,799

Applicant(s)

ZHANG ET AL.

Examiner

Timothy J Thompson

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-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,8,11-13,17,24 and 27-29 is/are rejected.
- 7) ☒ Claim(s) 2-7,9,10,14-16,18-23,25,26 and 30-32 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## **DETAILED ACTION**

### ***Informal Examiner's Amendment***

--Page 1, line 15, after "filed January 12, 2001" the wording "now U.S. Patent No. 6,512,119," has been added.

### ***Claim Objections***

Claim 8 is objected to because of the following informalities: Claim 8 states "said molecular system is bi-stable, which provides a non-volatile component.". Where claim 1, from which claim 8 depends, claims "a bi-stable molecular system". It is uncertain if the functional language "which provides a non-volatile component" is an additional limitation or merely a function of being bi-stable. Appropriate correction is required.

Claim 24 is objected to because of the following informalities: Claim 24 states "said molecular system is bi-stable, which provides a non-volatile component.". Where claim 17, from which claim 24 depends, claims "a bi-stable molecular system". It is uncertain if the functional language "which provides a non-volatile component" is an additional limitation or merely a function of being bi-stable. Appropriate correction is required.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA

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1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 8, 11-13, 17, 24, 27-29 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 8, 12, 13 and 32 of U.S. Patent No. 6,556,470 (Vincent et al.) in view of U.S. Patent No. 6,549,255 (Stebler et al.).

Regarding claim 1, Vincent et al. discloses an electric field activated bi-stable molecular system (claim 1, lines 6-8, 11 and claim 8) said molecular system having at least one rotor portion connected to at least one stator-portion (claim 1, lines 9 and 10, the stator and the rotor are obviously joined since they form a single molecule), wherein said at least one rotor portion rotates with respect to said at least one stator portion between two different states upon application of said electric field (claim 1, lines 9-11), thereby inducing a band gap change in said molecular system, wherein in a first state, there is extended conjugation throughout said molecular system, resulting in a relatively smaller band gap, and wherein in a second state, said extended conjugation is destroyed, resulting in a relatively larger band gap (claim 1, lines 13-18). Vincent et al. does not disclose the electric field is generated by a pair of electrodes. However, Stebler et al. discloses using a pair of electrodes for creating an electric field (claim 32). It would have been obvious to one skilled in the art at the time of the invention, to use

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electrodes to create an electric field as shown by Stebler et al., in the display of Vincent et al., since as shown by Stebler et al., electrodes are commonly used for creating an electric field.

Regarding claim 8, Vincent et al. discloses the molecular system is bi-stable which provides a non-volatile component(claim 8).

Regarding claim 11, Vincent et al. discloses the molecular system is changeable between a transparent state and a colored state(claim 12).

Regarding claim 12, Vincent et al. discloses the molecular system is changeable between one colored state and another colored state(claim 13).

Regarding claim 13, Vincent et al. discloses the molecular system has one rotor and one stator(claim 1, lines 10 and 11).

Regarding claim 17, Vincent et al. discloses an electric field activated bi-stable molecular system(claim 1, lines 6-8, 11 and claim 8) said molecular system having at least one rotor portion connected to at least one stator-portion(claim 1, lines 9 and 10, the stator and the rotor are obviously joined since they form a single molecule), wherein said at least one rotor portion rotates with respect to said at least one stator portion between two different states upon application of said electric field(claim 1, lines 9-11), thereby inducing a color change in said molecular system, wherein in a first state, there is extended conjugation throughout said molecular system, resulting in a first color state, and wherein in a second state, said extended conjugation is destroyed, resulting in a transparent state or second color state(claim 1, lines 13-18 and claim 13, since there are two states and the two states are different colors, the first state will be a color with

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the second state being a different color). Vincent et al. does not disclose the electric field is generated by a pair of electrodes, However , Stebler et al. discloses using a pair of electrodes for creating an electric field(claim 32). It would have been obvious to one skilled in the art at the time of the invention, to use electrodes to to create an electric field as shown by Stebler et al., in the display of Vincent et al., since as shown by Stebler et al., electrodes are commonly used for creating an electric field.

Regarding claim 24, Vincent et al. discloses the molecular system is bi-stable which provides a non-volatile component(claim 8).

Regarding claim 27, Vincent et al. discloses the molecular system is changeable between a transparent state and a colored state(claim 12).

Regarding claim 28, Vincent et al. discloses the molecular system is changeable between one colored state and another colored state(claim 13).

Regarding claim 29, Vincent et al. discloses the molecular system has one rotor and one stator(claim 1, lines 10 and 11).

### ***Allowable Subject Matter***

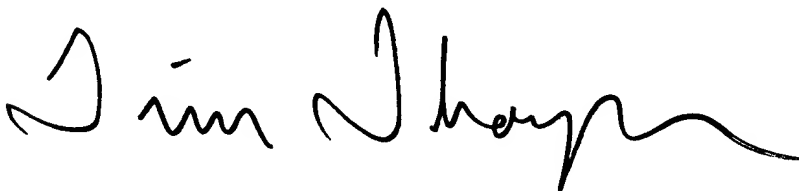
Claims 2-7, 9, 10, 14-16, 18-23, 25, 26, 30-32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. With the important features being the orientation of the rotor is perpendicular or parallel to the axis; the exact structure of the molecule; a low activation barrier between

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two states; the color is changed abruptly by the application of the voltage pulses to a switch with at least one activation barrier; two rotors each connected to one strator; one rotor connected between two strators; alternating rotors and strators.

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J. Thompson whose telephone number is (703) 305-0881. If the examiner can not be reached his supervisor, Georgia Epps, can be reached on (703) 308-4883.

A handwritten signature in black ink, appearing to read "Tim Thompson". The signature is fluid and cursive, with a long horizontal flourish at the end.